

First Street, Manchester

Block A&B Podium Lighting Calculations

Document Ref: 0250-HES-ZZ-01-CA-63001
Project Name: First Street, Manchester
Engineer: C. Taylor
Revision: C01
Date: 04/03/2024
Status: A5

Project: First Street, Manchester

Subject: Block A&B Podium Lighting Calculations

Revision	Issue/Revision Description	Prepared By	Approved By	Issue Date
C01	For Comment/Approval	C. Taylor	S. Boswarva	04/03/2024

EXTERNAL LIGHTING LEGEND

- A 4M HIGH FEATURE LED COLUMN FITTING
- B LED STRIP LIGHTING INSTALLED BELOW FIXED BENCHING AROUND CONICAL PLANTERS & RAISED EMBANKMENT & WITHIN WIND BAFFLES, FINAL CONNECTION TO BE BY CONCEALED PLUG & SOCKET TO ALLOW PLANTERS TO BE REMOVED IF REQUIRED
- C RECESSED LOW LEVEL LED FITTING WITHIN STREET PLANTER
- D LIGHTING LOW LEVEL BOLLARD FITTING
- E 'E' DENOTES EMERGENCY FITTING
- F IP65 RATED EXTERIOR RECESSED DOWNLIGHTER
- G FEATURE FESTOON LED LAMPS WIRED WITHIN TREE LINES, EXACT ARRANGEMENT TO BE AGREED
- H POST TOP LUMINAIRE MOUNTED ON 5M COLUMN
- J WALL MOUNTED LED AMENITY FITTING
- TS TIMECLOCK - EXTERNAL LIGHTING TO BE SWITCHED ON VIA TIMECLOCK AND TIME SPECIFIED BY ON-SITE TEAM
- OS OVERRIDE SWITCH FOR EXTERNAL LIGHTING
- NO EXTERNAL PHOTOCELL - LOCATION TO BE CONFIRMED BY ARCHITECT



REF D - LOW LEVEL BOLLARD FITTING



REF F - IP65 RATED EXTERIOR RECESSED DOWNLIGHTER



REF G - FEATURE FESTOON LED LAMPS WIRED WITHIN TREE LINES, EXACT ARRANGEMENT TO BE AGREED

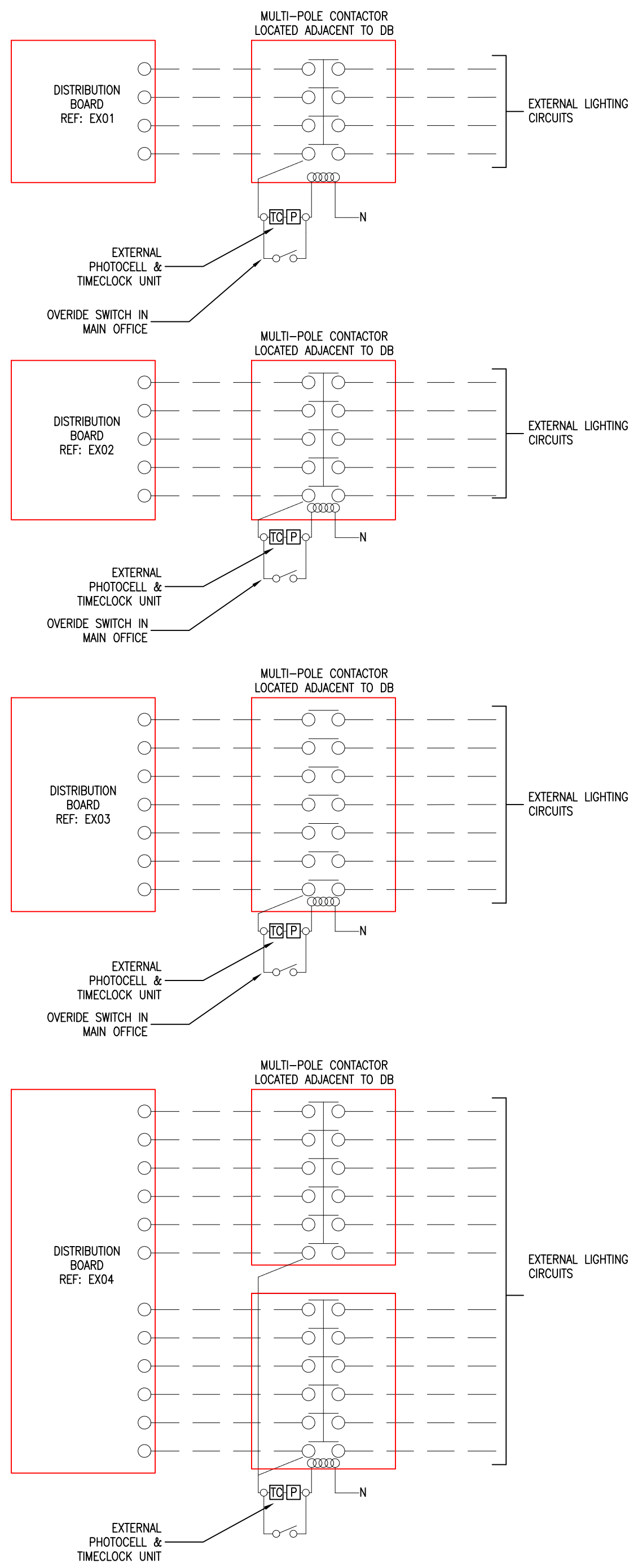


REF H - POST TOP LUMINAIRE MOUNTED ON 5M COLUMN



REF J - WALL MOUNTED LED AMENITY FITTING

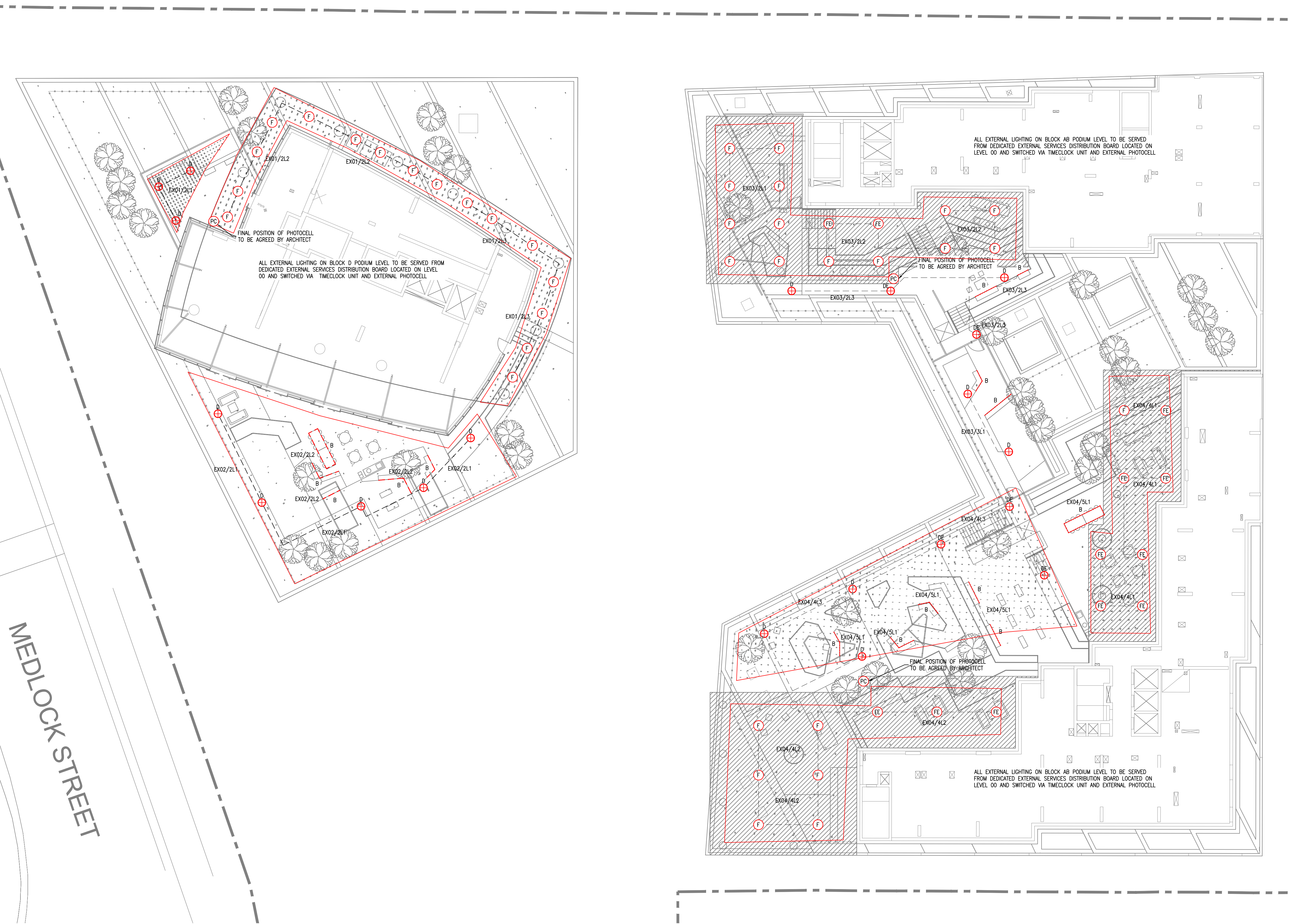
GROUND & PODIUM LEVEL
EXTERNAL LIGHTING ARRANGEMENT



REF A - 4M HIGH FEATURE LED COLUMN FITTING



REF C - RECESSED LOW LEVEL LED FITTING WITHIN STREET PLANTERS

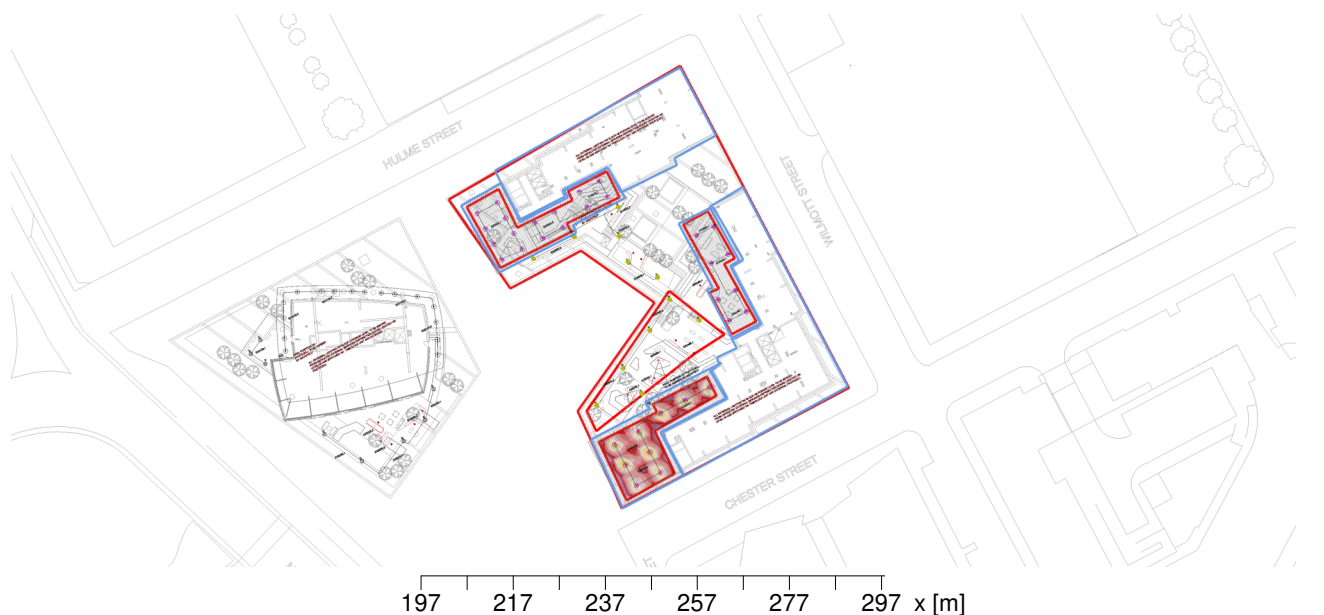
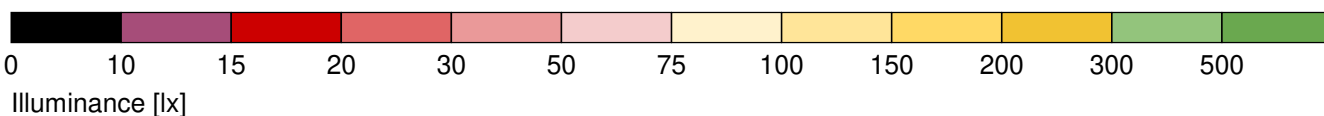


Object : FIRST STREET BLOCK AB PODIUM LIGHTING CA
 Installation : FIRST STREET BLOCK AB
 Project number : 0250
 Date : 04.03.2024

2 Block A&B Podium

2.2 Summary, Block A&B Podium

2.2.1 Result overview, Measuring area 1



General

Calculation algorithm used	Average indirect fraction
Height of evaluation surface	0.00 m
Maintenance factor	0.80
Total luminous flux	93269.2 lm
Total power	1017.8 W
Total power per area (3761.76 m ²)	0.27 W/m ²

Illuminance

Average illuminance	$\bar{E}_m$	53 lx
Minimum illuminance	E_{min}	6 lx
Maximum illuminance	E_{max}	214 lx
Uniformity U_o	$E_{min}/\bar{E}_m$	1:8.6 (0.12)
Diversity U_d	E_{min}/E_{max}	1:35 (0.03)

Type No.\Make

1 12 x CENTURY LIGHTING



Order No. : KTBL4053FLED-H80 25W
 Luminaire name : KTBL4053FLED-H80 25W
 Equipment : 1 x INDIVIDUAL SMD SAMSUNG 4053 25 W / 2505 lm

2 33 x

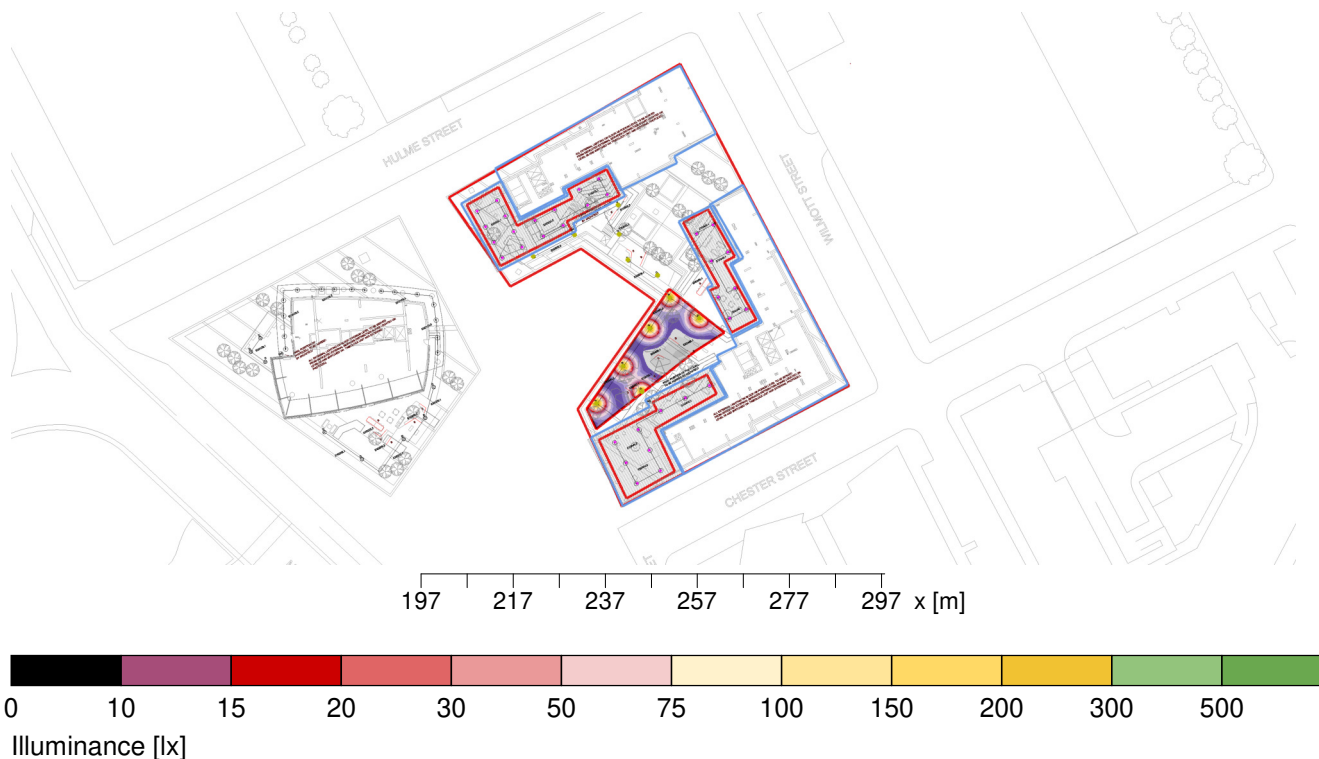


Order No. : GEA-15-9948-CA
 Luminaire name : Downlight GEA leds 18W
 Equipment : 1 x 15-9948-CA-CM 21.75 W / 1915.43 lm

Object : FIRST STREET BLOCK AB PODIUM LIGHTING CA
 Installation : FIRST STREET BLOCK AB
 Project number : 0250
 Date : 04.03.2024

2.2 Summary, Block A&B Podium

2.2.2 Result overview, Measuring area 2



General

Calculation algorithm used	Average indirect fraction
Height of evaluation surface	0.00 m
Maintenance factor	0.80
Total luminous flux	93269.2 lm
Total power	1017.8 W
Total power per area (3761.76 m ²)	0.27 W/m ²

Illuminance

Average illuminance	$\bar{E}_m$	22 lx
Minimum illuminance	E_{min}	0 lx
Maximum illuminance	E_{max}	281 lx
Uniformity U_o	$E_{min}/\bar{E}_m$	1:45 (0.02)
Diversity U_d	E_{min}/E_{max}	1:579 (0)

Type No.\Make

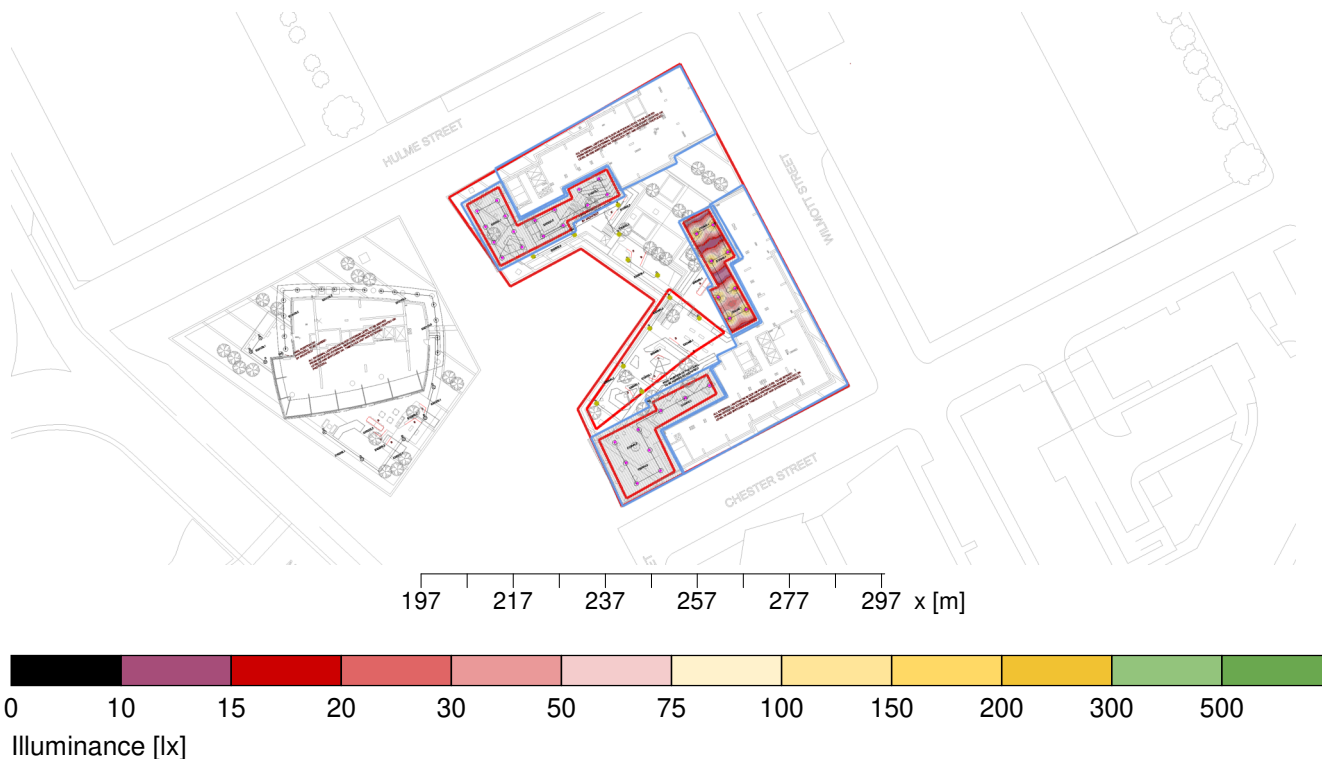
CENTURY LIGHTING

- | | | | |
|---|---|----------------|--|
| 1 | 12 x | Order No. | : KTBL4053FLED-H80 25W |
| |  | Luminaire name | : KTBL4053FLED-H80 25W |
| | | Equipment | : 1 x INDIVIDUAL SMD SAMSUNG 4053 25 W / 2505 lm |
| 2 | 33 x | Order No. | : GEA-15-9948-CA |
| |  | Luminaire name | : Downlight GEA leds 18W |
| | | Equipment | : 1 x 15-9948-CA-CM 21.75 W / 1915.43 lm |

Object : FIRST STREET BLOCK AB PODIUM LIGHTING CA
 Installation : FIRST STREET BLOCK AB
 Project number : 0250
 Date : 04.03.2024

2.2 Summary, Block A&B Podium

2.2.3 Result overview, Measuring area 3



General

Calculation algorithm used	Average indirect fraction
Height of evaluation surface	0.00 m
Maintenance factor	0.80
Total luminous flux	93269.2 lm
Total power	1017.8 W
Total power per area (3761.76 m ²)	0.27 W/m ²

Illuminance

Average illuminance	$\bar{E}_m$	68 lx
Minimum illuminance	E_{min}	7 lx
Maximum illuminance	E_{max}	214 lx
Uniformity U_o	$E_{min}/\bar{E}_m$	1:10.1 (0.1)
Diversity U_d	E_{min}/E_{max}	1:31.8 (0.03)

Type No.\Make

1 12 x CENTURY LIGHTING



Order No. : KTBL4053FLED-H80 25W
 Luminaire name : KTBL4053FLED-H80 25W
 Equipment : 1 x INDIVIDUAL SMD SAMSUNG 4053 25 W / 2505 lm

2 33 x

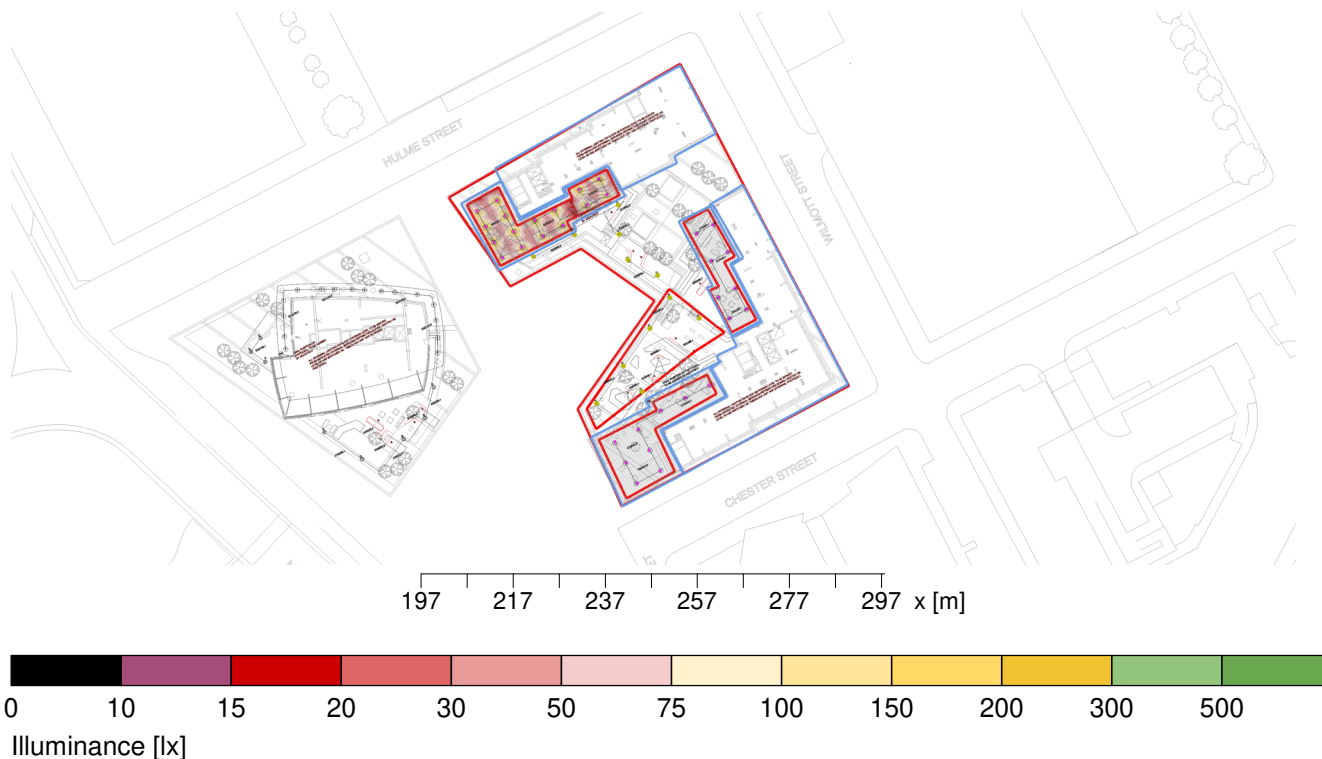


Order No. : GEA-15-9948-CA
 Luminaire name : Downlight GEA leds 18W
 Equipment : 1 x 15-9948-CA-CM 21.75 W / 1915.43 lm

Object : FIRST STREET BLOCK AB PODIUM LIGHTING CA
 Installation : FIRST STREET BLOCK AB
 Project number : 0250
 Date : 04.03.2024

2.2 Summary, Block A&B Podium

2.2.4 Result overview, Measuring area 4



General

Calculation algorithm used	Average indirect fraction
Height of evaluation surface	0.00 m
Maintenance factor	0.80
Total luminous flux	93269.2 lm
Total power	1017.8 W
Total power per area (3761.76 m ²)	0.27 W/m ²

Illuminance

Average illuminance	$\bar{E}_m$	84 lx
Minimum illuminance	E_{min}	15 lx
Maximum illuminance	E_{max}	218 lx
Uniformity U_o	$E_{min}/\bar{E}_m$	1:5.49 (0.18)
Diversity U_d	E_{min}/E_{max}	1:14.2 (0.07)

Type No.\Make

1 12 x CENTURY LIGHTING



Order No. : KTBL4053FLED-H80 25W
 Luminaire name : KTBL4053FLED-H80 25W
 Equipment : 1 x INDIVIDUAL SMD SAMSUNG 4053 25 W / 2505 lm

2 33 x

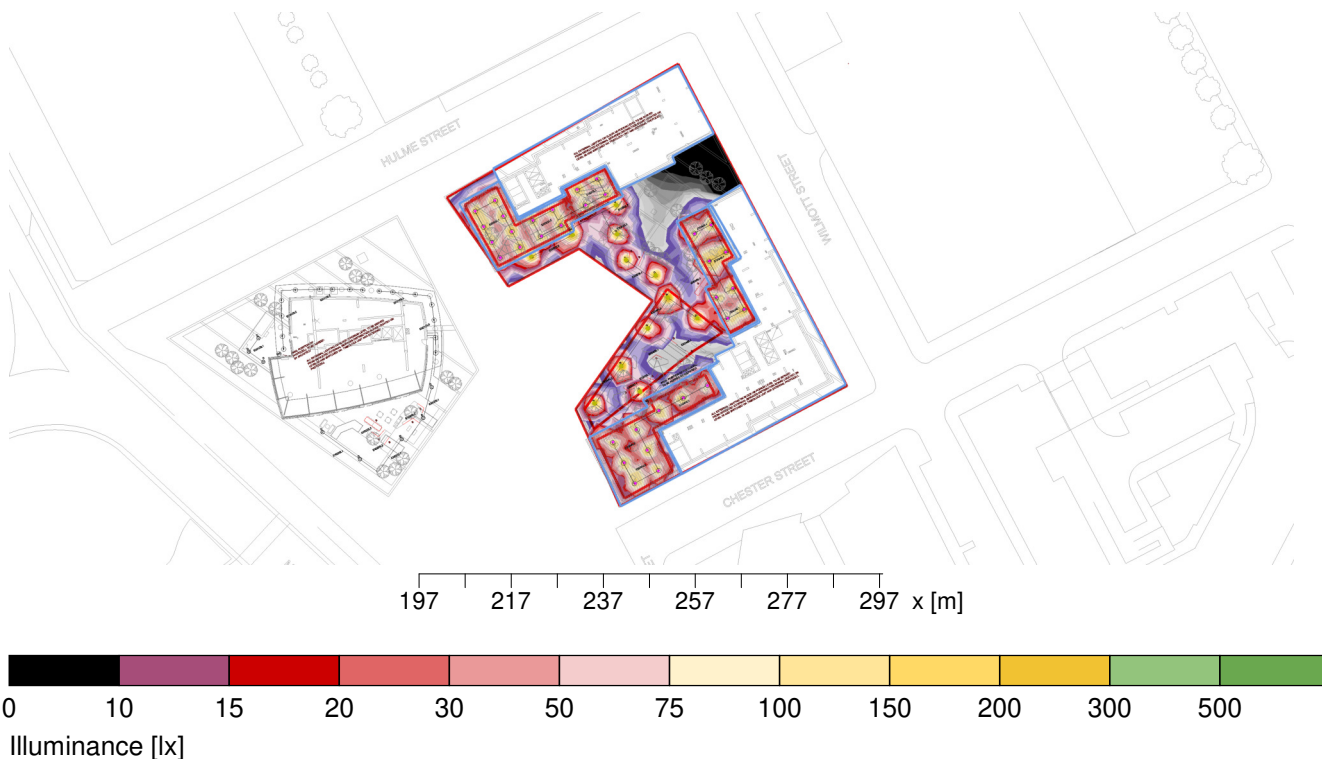


Order No. : GEA-15-9948-CA
 Luminaire name : Downlight GEA leds 18W
 Equipment : 1 x 15-9948-CA-CM 21.75 W / 1915.43 lm

Object : FIRST STREET BLOCK AB PODIUM LIGHTING CA
 Installation : FIRST STREET BLOCK AB
 Project number : 0250
 Date : 04.03.2024

2.2 Summary, Block A&B Podium

2.2.5 Result overview, Evaluation area 1



General

Calculation algorithm used
 Maintenance factor

Average indirect fraction
 0.80

Total luminous flux

93269.18 lm

Total power

1017.8 W

Total power per area (3761.76 m²)

0.27 W/m² (0.74 W/m²/100lx)

Evaluation area 1

Reference plane 1.1

Horizontal

$\bar{E}_m$

36.4 lx

E_{min}

0 lx

$E_{min}/\bar{E}_m (U_o)$

0.00

$E_{min}/E_{max} (U_d)$

0.00

Position

0.00 m

Type No. Make

CENTURY LIGHTING

1 12 x



Order No. : KTBL4053FLED-H80 25W

Luminaire name : KTBL4053FLED-H80 25W

Equipment : 1 x INDIVIDUAL SMD SAMSUNG 4053 25 W / 2505 lm

2 33 x



Order No. : GEA-15-9948-CA

Luminaire name : Downlight GEA leds 18W

Equipment : 1 x 15-9948-CA-CM 21.75 W / 1915.43 lm

First Street, Manchester

Block D Podium Lighting Calculations

Document Ref: 0253-HES-ZD-01-CA-63001
Project Name: First Street, Manchester
Engineer: C. Taylor
Revision: C01
Date: 04/03/2024
Status: A5

Project: First Street, Manchester

Subject: Block D Podium Lighting Calculations

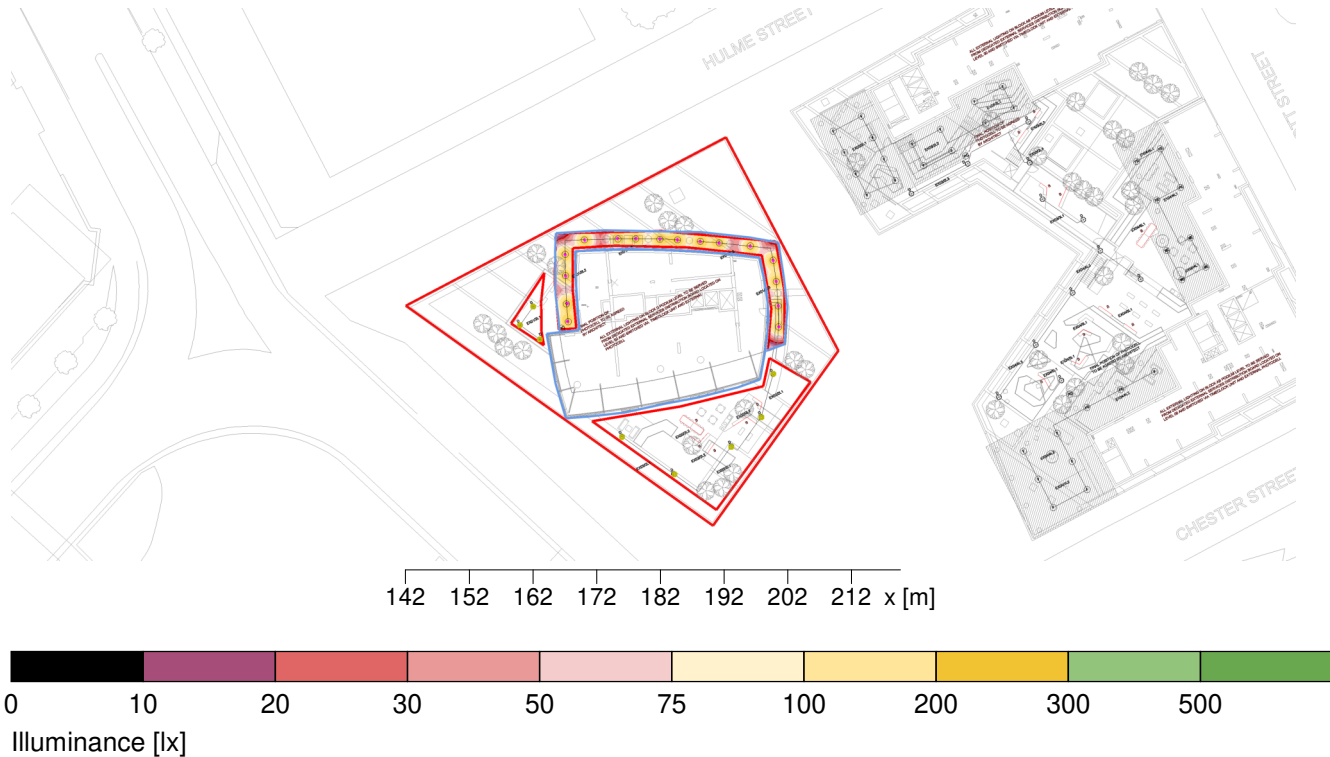
Revision	Issue/Revision Description	Prepared By	Approved By	Issue Date
C01	For Comment/Approval	C. Taylor	S. Boswarva	04/03/2024

Object : FIRST STREET BLOCK D PODIUM LIGHTING CAL
Installation : FIRST STREET BLOCK D
Project number : 0253
Date : 04.03.2024

2 BLOCK D PODIUM

2.1 Summary, BLOCK D PODIUM

2.1.1 Result overview, Measuring area 1



General

Calculation algorithm used	Average indirect fraction
Height of evaluation surface	0.00 m
Maintenance factor	0.80
Total luminous flux	50686.9 lm
Total power	548 W
Total power per area (2069.99 m ²)	0.26 W/m ²

Illuminance

Average illuminance	$\bar{E}_m$	115 lx
Minimum illuminance	E_{min}	5 lx
Maximum illuminance	E_{max}	226 lx
Uniformity U_o	$E_{min}/\bar{E}_m$	1:21.7 (0.05)
Diversity U_d	E_{min}/E_{max}	1:42.5 (0.02)

Type No.\Make

1 8 x CENTURY LIGHTING



Order No. : KTBL4053FLED-H80 25W
Luminaire name : KTBL4053FLED-H80 25W
Equipment : 1 x INDIVIDUAL SMD SAMSUNG 4053 25 W / 2505 lm

2 16 x

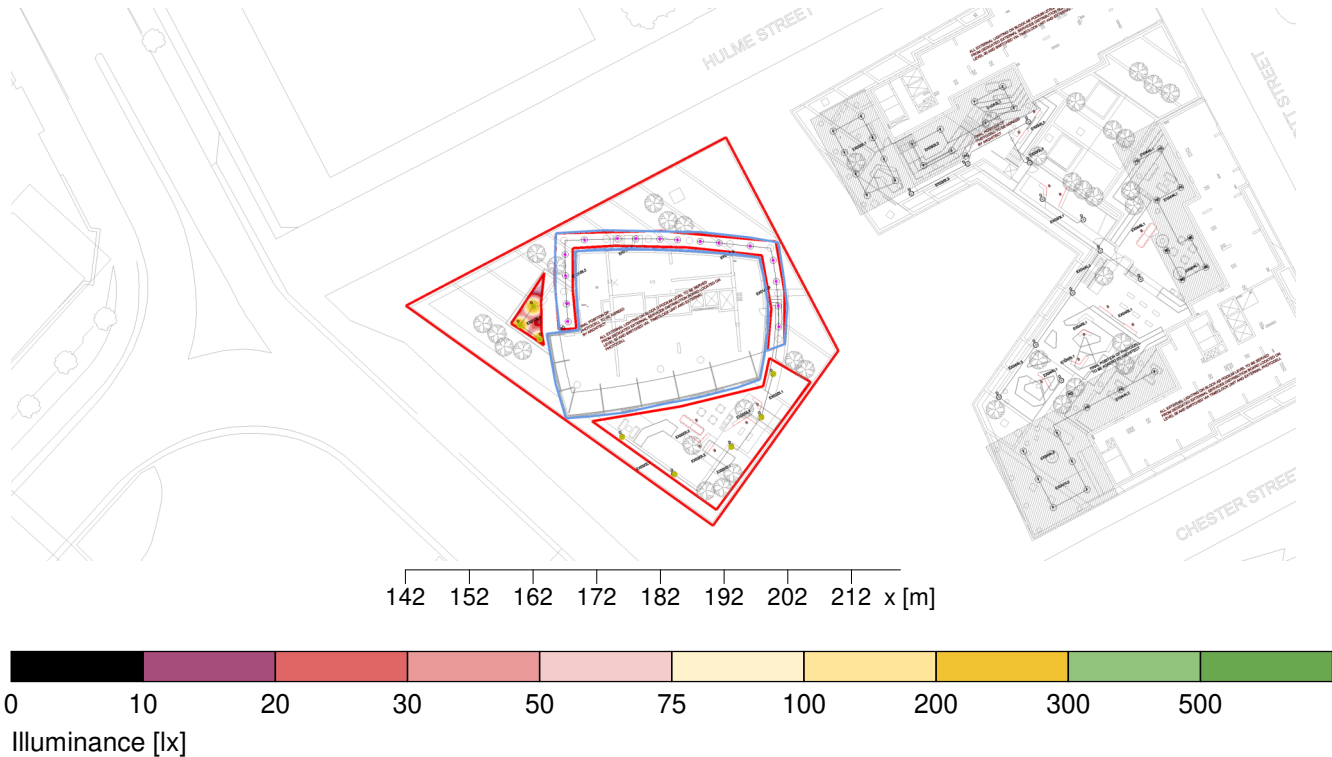


Order No. : GEA-15-9948-CA
Luminaire name : Downlight GEA leds 18W
Equipment : 1 x 15-9948-CA-CM 21.75 W / 1915.43 lm

Object : FIRST STREET BLOCK D PODIUM LIGHTING CAL
Installation : FIRST STREET BLOCK D
Project number : 0253
Date : 04.03.2024

2.1 Summary, BLOCK D PODIUM

2.1.2 Result overview, Measuring area 2



General

Calculation algorithm used	Average indirect fraction
Height of evaluation surface	0.00 m
Maintenance factor	0.80
Total luminous flux	50686.9 lm
Total power	548 W
Total power per area (2069.99 m ²)	0.26 W/m ²

Illuminance

Average illuminance	$\bar{E}_m$	101 lx
Minimum illuminance	E_{min}	4 lx
Maximum illuminance	E_{max}	289 lx
Uniformity U_o	$E_{min}/\bar{E}_m$	1:25.1 (0.04)
Diversity U_d	E_{min}/E_{max}	1:71.7 (0.01)

Type No.\Make

1 8 x CENTURY LIGHTING



Order No. : KTBL4053FLED-H80 25W
Luminaire name : KTBL4053FLED-H80 25W
Equipment : 1 x INDIVIDUAL SMD SAMSUNG 4053 25 W / 2505 lm

2 16 x

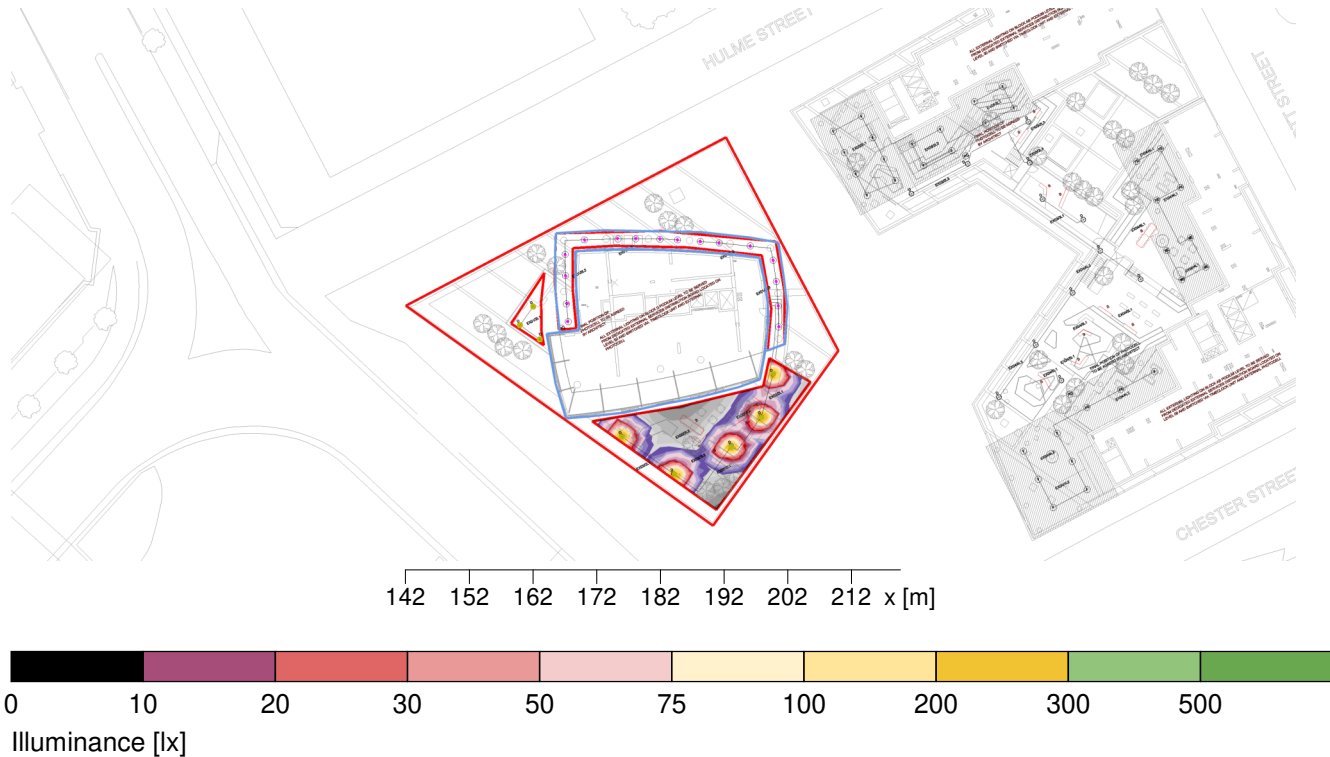


Order No. : GEA-15-9948-CA
Luminaire name : Downlight GEA leds 18W
Equipment : 1 x 15-9948-CA-CM 21.75 W / 1915.43 lm

Object : FIRST STREET BLOCK D PODIUM LIGHTING CAL
Installation : FIRST STREET BLOCK D
Project number : 0253
Date : 04.03.2024

2.1 Summary, BLOCK D PODIUM

2.1.3 Result overview, Measuring area 3



General

Calculation algorithm used	Average indirect fraction
Height of evaluation surface	0.00 m
Maintenance factor	0.80
Total luminous flux	50686.9 lm
Total power	548 W
Total power per area (2069.99 m ²)	0.26 W/m ²

Illuminance

Average illuminance	$\bar{E}_m$	20 lx
Minimum illuminance	E_{min}	0 lx
Maximum illuminance	E_{max}	271 lx
Uniformity U_o	$E_{min}/\bar{E}_m$	1:92.6 (0.01)
Diversity U_d	E_{min}/E_{max}	1:1280 (0)

Type No.\Make

1 8 x CENTURY LIGHTING



Order No. : KTBL4053FLED-H80 25W
Luminaire name : KTBL4053FLED-H80 25W
Equipment : 1 x INDIVIDUAL SMD SAMSUNG 4053 25 W / 2505 lm

2 16 x

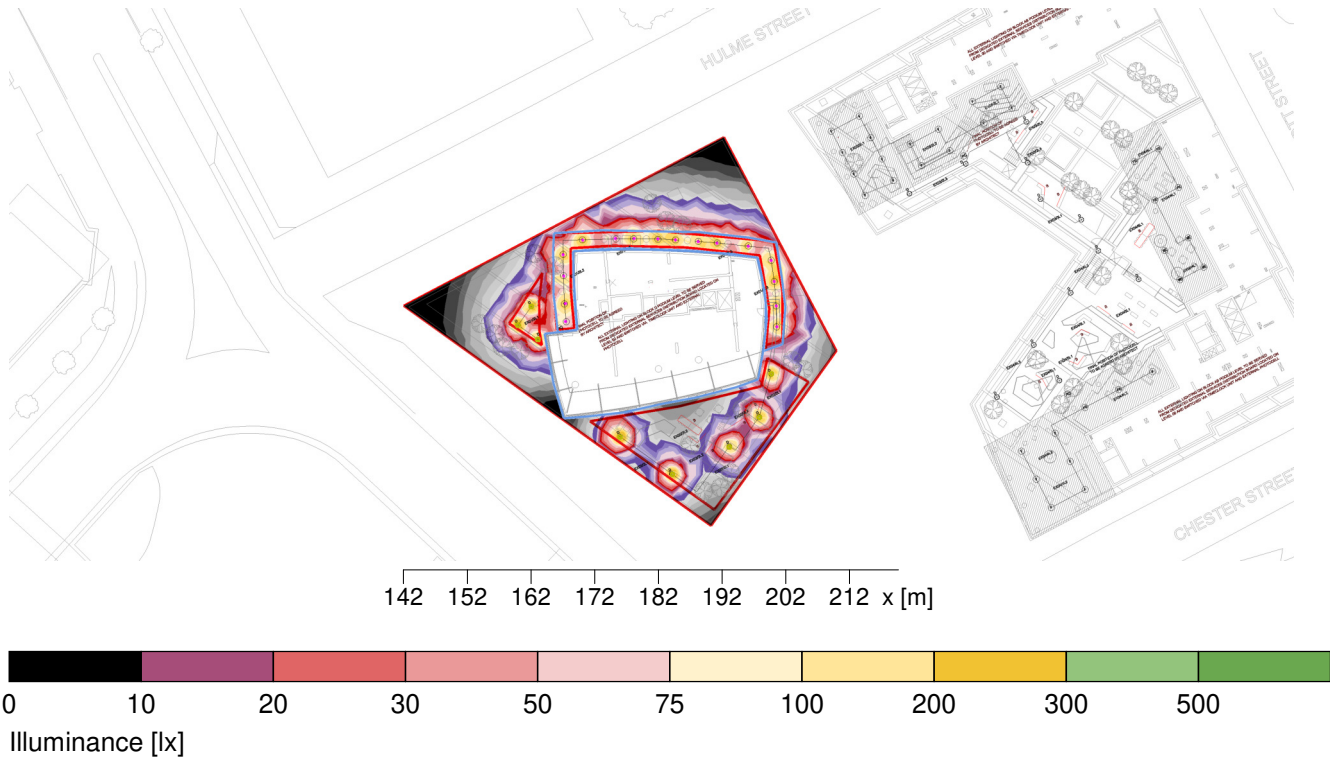


Order No. : GEA-15-9948-CA
Luminaire name : Downlight GEA leds 18W
Equipment : 1 x 15-9948-CA-CM 21.75 W / 1915.43 lm

Object : FIRST STREET BLOCK D PODIUM LIGHTING CAL
Installation : FIRST STREET BLOCK D
Project number : 0253
Date : 04.03.2024

2.1 Summary, BLOCK D PODIUM

2.1.4 Result overview, Evaluation area 1



General

Calculation algorithm used
Maintenance factor

Average indirect fraction
0.80

Total luminous flux

50686.88 lm

Total power

548.0 W

Total power per area (2069.98 m²)

0.26 W/m² (1.00 W/m²/100lx)

Evaluation area 1

Reference plane 1.1

Horizontal

$\bar{E}_m$

26.4 lx

E_{min}

0 lx

$E_{min}/\bar{E}_m (U_0)$

0.00

$E_{min}/E_{max} (U_d)$

0.00

Position

0.00 m

Type No. Make

CENTURY LIGHTING

1 8 x



Order No. : KTBL4053FLED-H80 25W

Luminaire name : KTBL4053FLED-H80 25W

Equipment : 1 x INDIVIDUAL SMD SAMSUNG 4053 25 W / 2505 lm

2 16 x



Order No. : GEA-15-9948-CA

Luminaire name : Downlight GEA leds 18W

Equipment : 1 x 15-9948-CA-CM 21.75 W / 1915.43 lm